SANNIKOV, V.N.; LEVITSKIY, P.A., otv. za vypusk.

[Technological progress and its economic effectiveness in the manufacture and application of lacquers and paints] Tekhnicheskii progress i ego ekonomicheskaia effektivnost' v proizvodstve i primenenii lakokrasochnykh materialov; konspekt lektsii. Khar'kov, Khar'kovskii politekhn. in-t im. V.I.Lenina, 1960.
(MIRA 14:9)

(Paint) (Lacquers and lacquering)

ZAMNIUS, F.K.; LEVITSKIY, P.A., otv. za vypusk

[Use of plastics in industrial and civil construction; lecture plan] Primenenie plastmass v promyshlennom i grazhdanskom stroitel'stve; konspekt lektsii. Khar'kov, M-vo vysshego i srednego spetsial'nogo obrazovaniia USSR, 1960. 22 p. (MIRA 14:7)

(Plastics) (Building materials)

LEVITSKIY, P.F., Vet.

"Treatment in bites by the Kaznakov's viper (vipera Kaznakovi Nicol)."

SO: Veterinariia 28(3), 1951, p. 35

LEVITSKIY, P. F.

USSR/Biology - Zoology

Card 1/1 Pub. 86 - 32/37

Authors : Levitskiy, P. F.

Title : New facts in the biology of the turtle

Periodical : Priroda 43/10, page 119, Oct 1954

Abstract : A description is given of experiments which proved that the swamp turtle (Emys Orbicularis L) besides eating vegetables, also catches and eats water fowl. Illustration.

Institution : ...

Submitted : ...

LEVITSKIY, P.F.

The black woodpecker in the Ukraine. Zool.zhur.34 no.6:1438-1439 N-D '55. (MLRA 9:1)

1.Vodno-sanitarnyy uchastok pristani g.Kremenchug.
(Ukraine--Woodpeckers)

LEVITSKIY, P.F., (g.Kremenchug, Poltavskoy oblasti)

Distribution of the Caucasian black partridge. Priroda 45 no.7: 115 Jl '56. (MLRA 9:9)
(Caucasus--Partridges)

LEVITSKIY, P.F.

Fish in the food of crows [with summary in English]. Zool. zhur. 37 no.8:1263 Ag '58. (MIRA 11:9)
(Crows) (Birds--Food)

LEVITSKIY, P.F. (Melitopol')

Nutrition and biology of starlings. Priroda 52 no.10:123 '63.
(MIRA 16:12)

14(5) SOV/9-59-2-1/16

AUTHORS: Il'in, A.A., and Levitskiy, P.I.

TITLE: Results of Geological Prospecting for Oil and Gas in 1958 (Itogi geologorazvedochnykh rabot na neft' i gaz za 1958 g.)

PERIODICAL: Geologiya nefti i gaza, 1959, Nr 2, pp 1-5 (USSR)

ABSTRACT: According to the new 7-Year Plan, oil and gas production in the Soviet Union shall reach by 1965 an amount of 230 to 240 million tons of oil and up to 150 billion m^3 of gas. The plan is based on the successful development of oil and gas production in 1958. General information is given on new gas and oil strata opened in 1958 in the following regions: the Volga-Ural province; the Cis-Caucasian region; the Dnepr-Donets depression; the Cis-Carpathian flexure; Azerbaijan, Turkmenistan and Uzbekistan. So, for instance; gas from Jurassic deposits reaching a yield of 4,000,000 m^3 and from Triassic deposits with a yield of 1,200,000m^3 per 24 hours was discovered in the Bel'sk stratum and a gas fountain was obtained from a depth of 4,750 m on the Apsheron Peninsula in Azerbaijan, producing 500,000m^3 of gas and 200 tons of condensate. Inspite of the aforementioned successes a series of deficiencies does still exist in geological prb!

Card 1/2

Results of Geological Prospecting for Oil and Gas in 1958

specting, due to insufficient seismic prospecting of structures causing delays of industrial production, and due to the lack of equipment. The authors stress the necessity of speeding-up the supply of improved geophysical equipment such as drilling installations ("Ufimets-Shmidt", URB-5; URB-7P, etc); core lifters; chisels, core bits and stratum testers. The supply of means of transportation for desert, moor and taiga conditions is required as well.

ASSOCIATION: Gosplan SSSR

Card 2/2

LEVITSKIY, P.I.

Oil and gas prospecting carried out in the U.S.S.R. in 1960 and problems of its development in 1961. Geol. nefti i gaza 5 no. 2:1-5 F '61. (MIRA 14:2)
(Petroleum geology) (Gas, Natural--Geology)

BRENNER, Mark Mironovich, doktor ekon. nauk; VAYNER, I.Ya., nauchnyy red.; LEVITSKIY, P.I., nauchnyy red.; PETRUSHEV, I.M., red.; PONOMAREVA, A.A., tekhn. red.

[Economics of the petroleum industry of the U.S.S.R.]Ekonomika neftianoi promyshlennosti SSSR. Moskva, Ekonomizdat, 1962. 391 p. (MIRA 15:8)

(Petroleum industry)

LEVITSKIY, P.I.

Brief account of the results of oil and gas prospecting in the U.S.S.R. in 1961 and problems for 1962. Geol. nefti i gaza 6 no.1:1-7 Ja '62. (MIRA 15:1)

1. Gosplan SSSR.

(Petroleum geology)
(Gas, Natural--Geology)

LEVITSKIY, P.M.

Showing changes in the blood vessels of a rabbits ear. Zet. v shkole no.3:80 My-Je '54. (MLRA 7:7)

1. Gomel'skiy pedagogicheskiy institut.
(Blood vessels)

Name: LEVITSKIY, P. M.

Dissertation: Changes in rabbit blood following rectal administration of heteroserum and their role in the nervous system

Degree: Cand Biol Sci

Affiliation: Belorussian State U imeni V. I. Lenin

Defense Date, Place: 1956, Minsk

Source: Knizhnaya Letopis', No 1, 1957

3-2-24/32

AUTHOR: Parmenov, V.I., Dotsent and Levitskiy, P.M.

TITLE: X-Ray Method of Instruction at the Natural-Science Departments of Pedagogical Institutes (Rentgenologicheskiy metod v prepodavanii na yestestvennykh fakul'tetakh pedagogicheskikh institutov)

PERIODICAL: Vestnik vysshey shkoly, Feb 1957, # 2, p 69 (USSR)

ABSTRACT: The authors state that instruction in anatomic-physiological courses by the natural science physical training faculties of the pedagogical institutes is inadequate. This is due to the fact that the Chairs of Anatomy and Physiology are poorly equipped and use poor methods of instruction. The authors enumerate the deficiencies in teaching anatomy and point to the X-ray method of instruction adopted in 1950 by the Gomel' Pedagogical Institute. The good results achieved are emphasized and the use of X-ray photographs as a means of visual instruction is recommended. It is also suggested that the institutes be supplied with cheap, portable X-ray units. They could also be used successfully in the agricultural institutes when teaching the anatomy of domestic animals.

Card 1/2

USSR/Human and Animal Physiology - (Normal and Pathological). T
Blood. Blood Transfusions and Blood Substitutes.

Abs Jour : Ref Zhur Biol., No 4, 1959, 17328

Author : Levitskiy, P.M.

Inst : Gomel' State Teachers Institute

Title : The Role of Nervous System in Changes of Blood of Rabbits after Rectal introduction of Heteroserum. 2nd Report.

Orig Pub : Uch. zap. Gomel'sk. gos. ped. in-t, 1957, vyp. 5, 152-165

Abstract : The content of Hb, number of erythrocytes (E) and agglutination reaction were determined in rabbits after rectal introduction of heteroserum (HS; 100-150 ml). E were analyzed in blood smears. The role of the nervous system in hematological shifts after introduction of HS was studied by means of partial exclusion of regions of the

Card 1/3

USSR/Human and Animal Physiology - (Normal and Pathological). T
Blood. Blood Transfusion and Blood Substitutes.

Abs Jour : Ref Zhur Biol., No 4, 1959, 17328

nervous system during the HS-enema. Receptory functions of the rectum were decreased by means of the introduction of 4-5° physiological solution; the function of the spinal cord was weakened by cooling it with ice shavings on a shaved strip on the back of the rabbit; the function of the brain was decreased by means of ether narcosis. Three days after the introduction of heteroserum, the amount of E decreased on the average by 25-30%, the amount of Hb by 10-12%. Deformation of E and microcytosis were observed; the agglutination reaction of E with the same serum changed. Fractional and simultaneous decrease of the function of receptors of the rectum and spinal cord leveled off the hemolytic shifts. The application of narcosis also softened the hematologic changes and repelled by the 3rd day after the introduction. Rectal introduction of 100 ml. of physiological solution after repeated

Card 2/3

USSR/Human and Animal Physiology - (Normal and Pathological). T
Blood. Blood Transfusion and Blood Substitutes.

Abs Jour : Ref Zhur Biol., No 4, 1959, 17328

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applications of HS induced an effect similar to the influence of the serums themselves, i.e., a conditioned reflex was formed, which was inhibited under the influence of narcosis during the period of introduction and extinguished after a 6-month interruption in the experiments. -- M.B. Gol'dberg

Card 3/3

LEVITSKIY, P.M., kand.biol.nauk

Using a rabbit in experiments on the subject "Blood circulation organs." Biol. v shkole no.5:37-38 S-O '58. (MIRA 11:11)

1. Gomel'skiy pedagogicheskiy institut.
(Hematology--Study and teaching)
(Rabbits as laboratory animals)

LEVITSKIY, P.M., kand.biol.nauk

Lesson in studying the subject "Reflex." Biol.v shkole no.5:42-43 S-O '59. (MIRA 13:8)

1. Gomel'skiy pedagogicheskiy institut.
(Reflexes--Study and teaching)

LEVITSKIY, P.M., kand.biologicheskikh nauk

Visual aids in biology from the organs of poultry and rabbits. Biol. v shkole no.3:84-85 My-Je '62. (MIRA 15:7)

1. Kirovogradskoy pedagogicheskiy institut.
(Biology--Audio-visual aids)

SEDOV, K.R., kandidat meditsinskikh nauk; LEVITSKIY, R.M., glavnyy vrach.

Mass survey of arterial pressure in the population. Sov.med. 17 no.7:33 Jl '53. (MLRA 6:8)

1. Terapevticheskoye otdeleniye Stavropol'skoy rayonnoy bol'nitsy.
(Hypertension) (Medical statistics)

LATYSHEV, G. D.

PHASE I BOOK EXPLOITATION SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. N. Abduramulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. N. Iobanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Mishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

Card 1/20

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

Transactions of the Tashkent (Cont.) SOV/5410

instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION IN ENGINEERING AND GEOLOGY

LEVITSKIY, S. [Levyts'kyi, S.], kand.fiz.-matem.nauk

Star lighted on earth. Nauka i zhyttia 13 no.7:16-21 Jl '63. (MIRA 16:10)

5.1190

AUTHORS: Katsobashvili, Ya. R., Kurkova, N. S., Levitskiy, E. A.

TITLE: Brief Communications. Sublimation of Molybdenum Oxide From Alumino-Molybdenic Catalysts

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 3, pp 734-736 (USSR)

ABSTRACT: Alumino-molybdenic catalysts 16M and 27M prepared by joint precipitation, and catalyst 28M prepared by separate precipitation of aluminum hydroxides and lower valencies molybdenum, sustained, without sublimation or physical changes, after 270 hr heating at 800° C or at rapid heating to 900° C. Catalysts 38M to 41M prepared by saturating aluminum hydroxide with ammonium molybdate, and commercial catalyst 7A6M similarly prepared from aluminum oxide, lost by sublimation a considerable amount of the original MoO3 content at a short heating to above 800° C. The catalysts became caked and completely lost their mechanical resistance.

Card 1/2

Brief Communications. Sublimation of [illegible]
Molybdenum Oxide From Alumino-Molybdenic [illegible]
Catalysts

There are 6 references, 1 U.S., [illegible] Soviet. The U.S. reference is: A. A. Burton & others, Chem. Eng. Progr., 44, 3, 195 (1948).

SUBMITTED: April 24, 1959

Card 2/2

LEVITSKIY., S. G. and LAVORKO, P. K.

Gal'vanicheskie pokrytiia detalei mashin i priborov. Kiev, Mashgiz, 1949. 231 p. illus.

Bibliography: p. [228]

Electroplating of machine parts and apparatus.

DLC: TS660.L3

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

LEVITSKIY, Sh.; VASIL'YEVYKH, N.

Honing with synthetic diamonds. Avt. transp. 43 no.8:33-34 Ag '65. (MIRA 18:9)

ROYTMAN, Z.; LEVITSKIY, Sh.

Improving the quality of repairing. Avt.transp. 41 no.4:33-35 Ap '63. (MIRA 16:5)

1. Glavnyy inzhener 1-go Kiyevskogo avtoremontnogo zavoda (for Roytman). 2. Nachal'nik tekhnicheskogo otdela 1-go Kiyevskogo avtoremontnogo zavoda (for Levitskiy).
(Motor vehicles--Maintenance and repair)

KUNKIN, Ya.A., kand.tekhn.nauk; PIDGAYETSKIY, G.Ya. [Pidhaiets'kyi, H.IA.], inzh.; LEVITSKIY, Sh.A. [Levyts'kyi, Sh.A.], inzh.

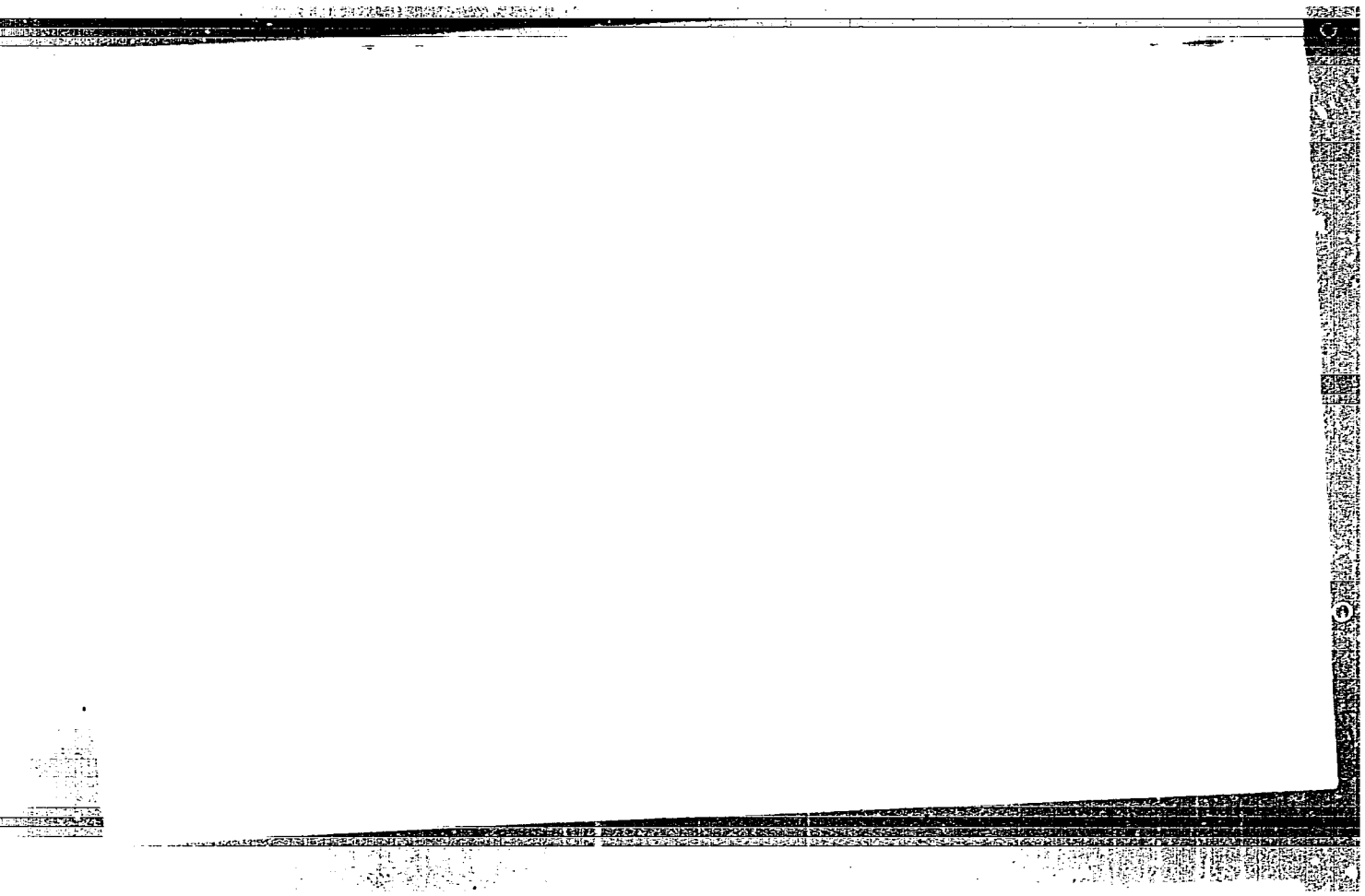
Machinery surfaces of connecting rod joints. Mekh. sil'. hosp. 12 no.9:10-12 S '61. (MIRA 14:11)
(Connecting rods)

CHIKALOV, G.P.; ROYTMAN, Z.L.; LEVITSKIY, Sh.A.; MUCHNIK, F.E.; MITSKEVICH, Z.A.; SHAPIRO, A., otv. za vypusk

[Manufacturing motor-vehicle parts of capron]Izgotovlenie detalei avtomobilia iz kaprona. Kiev, Nauchno-issl. in-t mestnoi i toplivoi promyshl., 1959. 45 p. (MIRA 16:1)
(Nylon) (Motor vehicles—Design and construction)

LEVITSKIY, S.I.

Prospecting for the Shargun coal deposit in southern Uzbekistan. (MIRA 18:1)
Mat GKZ no.3:65-68 '63



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112-57-7-15124

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 7, p 190 (USSR)

AUTHOR: Levitskiy, S. M.

TITLE: Oxide-Coated Cathode Poisoning Due to Oxide-Electrode Film Dissociation Under Electronic Bombardment (Otravleniye oksidnogo katoda za schet dissotsiatsii plenki oksida na elektrodakh pod deystviyem bombardirovki elektronami)

PERIODICAL: Nauk zap. Kiivs'k. un-t, 1955, Vol 14, Nr 8, pp 195-197

ABSTRACT: Oxide-coated cathode poisoning of a 6AS7 tube is investigated at 750°K by taking the voltage-current characteristics of the first grid. With a voltage of 6-7 v on the first grid (other electrodes were under 10 v), a drooping current was observed, caused by cathode poisoning due to dissociation of an alkali-earth element oxides -- BaO, SrO and CaO -- on the surface of the first grid.

Yu.N.B.

Card 1/1

Levitskiy, S.M.

H

USSR /Electronics

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9834

Author : Levitskiy, S.M.
Inst : Not given
Title : Electrode Evaporation and Space Potential in High Frequency Discharge.

Orig Pub : Nauk. zap. Kiivs'k. un-t, 1955, 14, No 8, 199-207

Abstract : In order to clarify the physical phenomena that cause the reinforced evaporation of electrodes in high frequency fields, the author undertook an investigation of the distribution of the potential in the space. A measurement of the potential was by means of probes at frequencies from 3 to 65 Mc. It was established that the potential even at rather high discharge intensities does not exceed 20 -- 30 volts (pressure above 0,4 mm mercury at 68 Mc and above, 5 mm mercury at 3 Mc). As the pressure diminishes,

Card : 1/3

H

USSR / Electronics.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9834

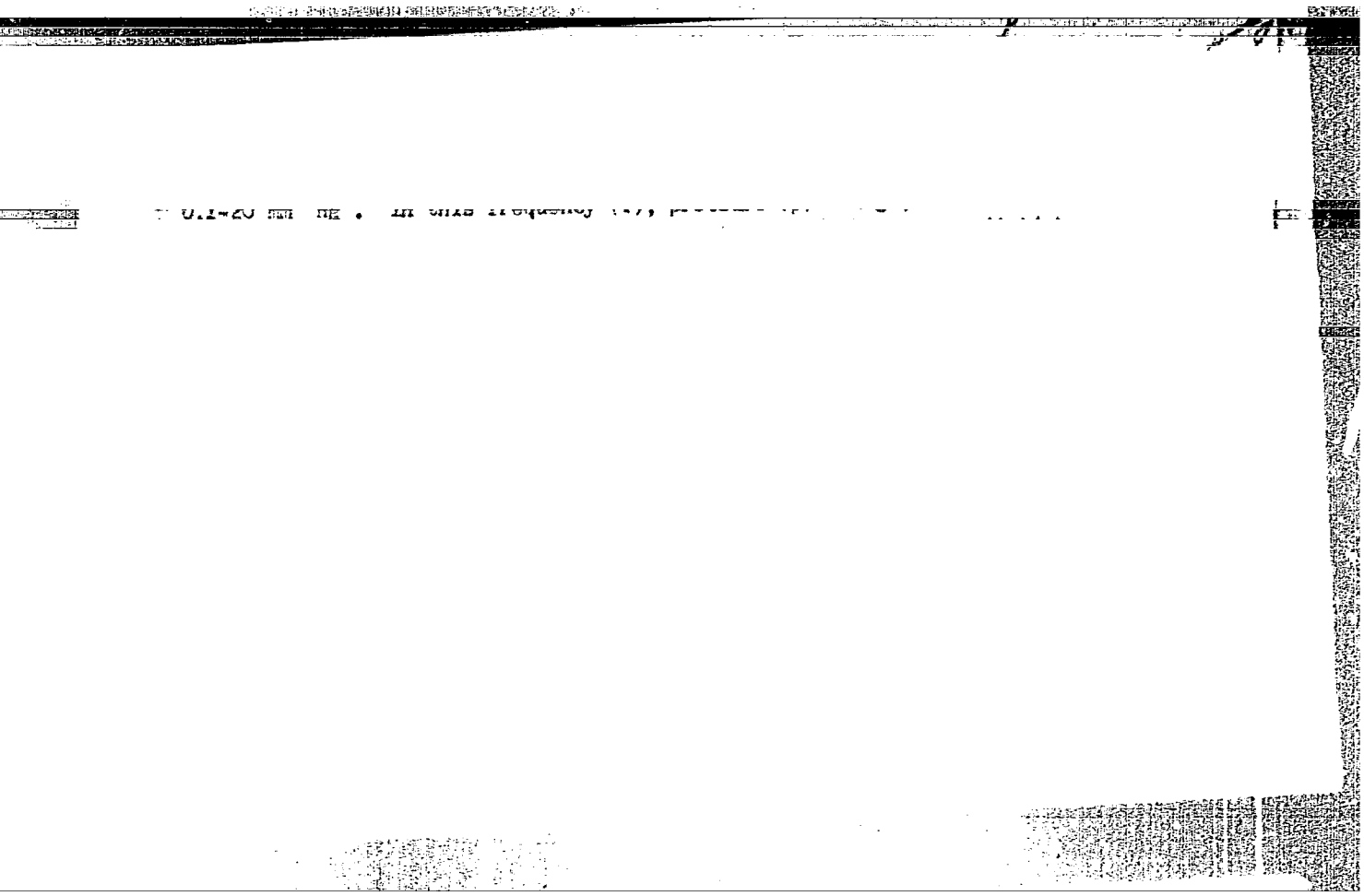
Abstract : the potential increases to 300 -- 400 volts (10^{-2} -- 10^{-3} mm mercury at 68 Mc and 10^{-1} -- 10^{-2} mm mercury at 3 Mc). In all these cases the potential of the probe retained positive polarity relative to the electrode and increased with increasing high frequency voltage. Consdquently, in a high frequency discharge, there may exist a sufficiently large positive space potential, due to the presence of positive space charge. An attempt is made by solving the Poisson equation to estimate the value of this potential. In the derivation of the formula he assumes constant concentration of both the ions along the discharge axis, as well as of the basic mass of electrons located inside the gap in oscillating state. These assumptions lead to calculation results that are somewhat high compared with the data of the investigation. It is established experimentally that the intense evaporation of the metal is observed only at higher space

Card : 2/3

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9834

Abstract : potentials to 200 -- 300 volts. The character of the evaporation differed from the diffusion type of [illegible] tion at dc. As a rule, in a high frequency dischargethe evaporation was observed only locally. The comparative investigation of the evaporation at dc and high frequency voltages shows that in the former case intensity of evaporation was 0,4 -- 0,6 mg/w-hr, and in the second it reached 1 -- 2 mg/w-hr. The application of dc fields to a high frequency discharge increases by a factor of 2 -- 3 the evaporation at the negative electrode, this being attributed to the large ion energy, obtained as a result of the total field. In the latter case, one observes a considerable shift of the glow at the negative electrode and at the same time the difference of potential between the probe and the positive electrode remained unchanged. Bibliography, 9 titles.

Card : 3/3



Levitskiy, S.M.

USSR/Electronics - Electronic and Ionic Emission

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12277

Author : Levitskiy, S.M., Kulik, A.Ye.

Inst :

Title : Method of Measuring the Total Transverse Resistance of an Oxide Cathode in Certain Commercial Types of Vacuum Tubes.

Orig Pub : Tr. N.-i. in-ta. M-vo radiotekhn. prom-sti SSSR, 1956, vyp. 2-3 (30-31), 60-65

Abstract : A method is proposed for measuring the total impedance of the oxide cathode, suitable for pentodes with the third grid brought out. The third grid is used as a probe, which captures some of the electron stream from the cathode to the anode. When measuring the value of the emission current diverted from the cathode, a change takes place in the voltage drop across the resistance of the cathode layer, and consequently, in the difference of potential between the cathode and the third grid. The resistance

Card 1/2

LEVITSKIY, S.M.

PA - 3549

AUTHOR LEVITSKIY S.M.

TITLE Investigation of High-Frequency Discharge Sparking Potential. (Issledovaniye potentsiala zazhiganiya vysokochastotnogo razryada v gaze v perekhodnoy oblasti chastot i davleniy.- Russian)

PERIODICAL Zhurnal Tekhn. Fiz. 1957, Vol 27, Nr. 5, pp 970-977 (U.S.S.R.)

ABSTRACT The investigation is carried out in the domain in which electron emission is no longer connected purely with diffusion, but occurs mainly at the expense of the motion of the electrons in the high frequency field. It is shown that these two kinds of electron emission correspond to two different kinds of high frequency discharge which differ considerably as to properties. It is shown that in the domain of frequencies and pressures in which the amplitude A of the electron oscillations becomes commensurable with the width of the discharge interval d the formation of the discharge is actually localized within range of a width d-2A. The latter is called the virtual discharge interval (by the author). This domain fluctuates with field frequency and touches alternatingly the right and the left electrode. The calculation of the ignition potential calculated on this basis agrees well with experimental data. The jump

CARD 1/2

PA - 3554

AUTHOR: LEVITSKIY, S.M.

TITLE: Space Potential and Electrode Pulverisation in High-Frequency Discharge. (Potentsial prostranstva i raspyleniye elektrodov v vysokochastotnom razryade, Russian)

PERIODICAL: Zhurnal Tekh.Fiz. 1957, Vol 27, Nr 5, pp 1001-1009 (U.S.S.R.)

ABSTRACT: By measuring with the aid of probes and by measuring the energy of the ions emitted from the high-frequency discharge it was established that a very high positive space potential usually exists within the high-frequency discharge at a frequency of the order of 10^6 - 10^8 c and pressures of 10^{-2} - 1.0 mm torr. This potential is commensurable with the amplitude of the high-frequency voltage on the occasion of the discharge. This is caused by the excess of positive ions in the discharge, which is mainly brought about by the conduction of the more mobile electrons to the electrodes through the high-frequency field. It follows therefrom that the observed intense pulverisation of electrodes is caused just by this positive space potential, by which the ions are ejected from the discharge in the direction towards the electrodes and are accelerated up to high energies. Besides, some

Card 1/2

SOV/120-59-2-43/50

AUTHORS: Levitskiy, S.M., and Golovan', A.N.

TITLE: A Generator of Voltage Markers (Generator metok napryazheniya)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 2, p 142 (USSR)

ABSTRACT: When the volt-amp characteristics of various instruments are examined in a CRO screen, it is often convenient to have markers on the voltage axis so that readings along this axis can be easily accomplished. The circuit shown in Fig 1 may be used for this purpose. It can produce voltage markers between 0 and 250 V. The main part of the circuit is a voltage discriminator based on a 6Kh6S tube. The signal at the output of the discriminator is in the form of a trapezoidal pulse. This pulse is amplified by the valve Л3, differentiated by an RC circuit and the negative part is cut off by the diode DG-Ts24. The pulse is clipped by a blocking oscillator triggered by the tube Л4. The length of the pulse at the output can be made very short. In the present case it does not exceed 100 μ. The pulse is applied to the brightness modulator of the CRO through an output

Card 1/2

A Generator of Voltage Markers SOV/120-59-2-43/50

cathode follower. The marker is in the form of a bright spot on the oscillogram and appears at the instant when the voltage at the output of the circuit passes through a value close to the voltage taken off the potentiometer П (which is indicated by the voltmeter).

There are 2 figures and 1 Soviet reference.

Card 2/2

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet (Kiyev State University)

SUBMITTED: October 4, 1958

SOV/109-4-8-2/35

AUTHORS: Levitskiy, S.M. and Shashurin, I.P.

TITLE: Verification of the Applicability of the Probe Methods to the Measurement of the Charge Concentration in a High-frequency Discharge

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1238 - 1243 (USSR)

ABSTRACT: The aim of this investigation was the determination of the accuracy of the probe methods of measurement of charge concentrations in high-frequency discharges, by comparing them with the cavity-resonator method which was used as the standard. First, the double-probe method was used to measure the charge concentration in a high-frequency discharge which was excited by a 200 W high-frequency generator at various mercury-vapour pressures. Simultaneously, the charge concentrations were measured by the resonator method. The results are shown in Table 2, where the first column indicates the frequency of the discharge, the third column shows the electron concentrations measured by the resonator method, while

Card1/4

the fourth column gives the values of the ion concentration measured by the double-probe method. It is seen that the ion concentrations measured by the probe method are higher than the electron concentrations determined by the resonator method. The discrepancies can be explained by analysing the equivalent circuit of the double-probe device; this is shown in Figure 1. By investigating this circuit, it was found that the current-voltage characteristic of the double probe is affected by the parasitic capacitances of the system; the effect is illustrated in Figure 2 for various values of the parasitic capacitance. On the other hand, it is found that for the same electron concentration, the current-voltage characteristics of the double probe in a high-frequency discharge differ from those of direct-current discharge (see Curves 1 and 2 of Figure 3). With regard to the single-probe method, it was found that - although the parasitic capacitance has some effect - this is comparatively insignificant since the dynamic impedance of a single probe at high electron currents

Verification of the Applicability of the Probe Methods to the Measurement of the Charge Concentration in a High-frequency Discharge

is small and is usually two to two-and-a-half orders lower than the dynamic impedance of the ionic portion of the characteristics. The measurement of the electron concentration in the investigated high-frequency discharge was effected by the substitution method, i.e. the high-frequency discharge was replaced by an equivalent direct-current discharge (which produced in the resonator the same frequency shift). The values of the electron concentrations thus obtained are indicated in Table 3. From this, it is seen that the single-probe method can be applied to the measurement of the charge concentrations in high-frequency plasma. The above investigation was carried out under the assumption that in the high-frequency discharge, as well as in the equivalent direct-current discharge, the electron concentration is radially uniform. The validity of this assumption was verified by means of a special tube which was fitted with a probe which could be displaced radially. At frequencies from 3 - 20 Mc/s, it was found that the

Verification of the Applicability of the Probe Methods to the Measurement of the Charge Concentration in a High-frequency Discharge

radial distribution of the charges was essentially constant.
There are 3 figures, 3 tables and 15 references, 6 of which are English, 2 German, 1 French and 6 Soviet.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko, Kafedra elektroniki (Kiyev State University im. T.G. Shevchenko, Chair of Electronics)

SUBMITTED: March 5, 1959

Card 4/4

LEVITSKIY, S.M.

66702

24(2)20 SOV/109-4-8-22/35

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

I.M. Podgornyy and N.G. Koval'skiy - "New Data on X-ray
Radiation During Pulse Discharges"
V.A. Khrabrov and M.M. Bulkovskaya dealt with the investi-
gation of the neutron radiation in powerful gas discharges
in chambers with conducting walls.
N.A. Borzunov et al. - "Investigation of the Gas Discharge
in a Conical Chamber".
S.M. Osovets et al. - "A Turn of Plasma in Transverse
Magnetic Field".
I.G. Kesayev "Data on the Division of a Cathode Spot
on Mercury in a Low-pressure Arc" (see p 1289 of the
journal).
A.E. Robson (England) - "A New Theory of the Cathode Spot"
(see p 1295 of the journal).
L.N. Braunova - "Positive Column in a Hydrogen Discharge
With Stationary and Pulse Loads".
I.G. Nekrashevich and A.A. Labud - "Current Distribution on
the Surface of Electrodes in Electric Pulse Discharges".
L.S. Eyg - "Some Properties of Gas Discharges in Low-voltage
in Halogen Counters".

Card 9/14

G.I. Glotova and V.L. Granovskiy - "Comparison of the
Initial De-ionisation in the Isotopes of Hydrogen (H
and D)".
L.A. Akel'nima communicated some results on the pre-breakdown
current pulses at low pressures.
M.Ye. Vasil'yeva and A.A. Zaytsev - "Charge-density
oscillation Waves in Cylindrical Plasma".
L. Pekárek of Czechoslovakia communicated some information
on the wave-like phenomena in gas-discharge plasma.
B.G. Breshnev dealt with the problem of the determination
of the energy of fast ions in pulse discharges.
B.B. Kadomtsev - "Convection Instability of a Plasma String".
S.I. Braginskiy and V.D. Shafranov - "Theory of a High-
temperature Plasma String".
The fifth section was presided over by N.A. Kapteov and
dealt with high-frequency currents in gases. The following
papers were read:
V.Ye. Golant - "Formation of Ultra-high Frequency Pulse
Discharges in Inert Gases".
G.I. Pateyuk - "Influence of the Boundary Conditions on
the Formation and Maintenance of High-frequency Discharges".
P.S. Bulkin et al. - "Investigation of a Self-maintained
Ultra-high Frequency Pulse Discharge and the Process of
its Development".
G.N. Zastenker and G.S. Solntsev - "Some Results of the
Investigation of the Formation of Low-pressure High-
frequency Discharges".
S. Margenau (USA) - "Conductivity of Weakly Ionised
Plasma".
A.A. Kuzovnikov - "The Conditions of Transition From
High-frequency Corona Discharge at Atmospheric Pressure".
V.Ye. Golant - "The relationship Between the Character-
istics of the Ultra-high Frequency Current and the Direct
Current in Gas Discharges".
B.B. Lagov'yev analysed the conductivity of the disin-
tegrating plasma in the window of a resonance discharge
tube.
S.M. Levitskiy and I.P. Shashurin dealt with the
applicability of the probe method to high-frequency
discharges (see p 1238 of the journal).

Card 11/14

The paper by V. Ye. Mitsuk et al. was devoted to the
investigation of the ultra-high frequency plasma by
means of the Stark effect.
G.S. Solntsev et al. dealt with the problem of electric
fields in a high-frequency discharge at low pressures.
Ye. Badareu of Rumania read a paper entitled "High-
frequency Discharges in Methane".
The work of the sixth section was devoted to the problems
of plasma and its radiation; the section was presided
over by V.A. Fabrikant. The following papers were read:
Yu.M. Kagan - "New Techniques in the Probe Methods of Plasma
Investigation?
V.I. Drozdov - "Oscillographic Measurements in Plasma".
V.A. Simonov and A.G. Mileshkin - "Investigation of the
Movement of Plasma by Means of a Mass Spectrometer of
the Transit Time"
A.V. Rubchinskiy ... Oscillations on a ...

24 (3), 9 (3) SOV/48 23-8-3/25

AUTHORS: Levitskiy, S. M., Shashurin, I. P.

TITLE: The Measurement of Concentration of Discharges in Plasma by the Method of a High-frequency Probe

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959 Vol 23, Nr 8, pp 948 - 951 (USSR)

ABSTRACT: In the present paper a non-symmetrical oscillator and a bi-conductor probe are used. The construction of the tube, of the high-frequency probe, and the excitation system are described by means of figure 1a in the first part. For this non-symmetrical oscillator the reactive resistance is given by means of formula (1) from which the concentration of the charges may then be determined using formula (2). The measurement results are summarized in a diagram (Fig 2) and compared with the computed values. Simultaneously, the emission capacity of the oscillator was investigated. In the second part of the paper the bi-conductor probe is described by means of figure 1b. The concentration of electrons in the plasma depending on the wave-length is shown in the diagram in figure 3, where the curve was formed by means of the method described here. The

Card 1/2

The Measurement of Concentration of Discharges in Plasma by the Method of a High-frequency Probe SOV/48-23-3-3/35

other curve was determined by measurements with a Langmuir probe. It may be seen that the high-frequency probe gives lower values of electron concentration. The results described here were obtained with a wave-length of 2 cm and it is ascertained that the same results were obtained with a wave-length of 3 cm. The authors thank Professor N. D. Morgulis for his interest and for discussing the results. There are 3 figures and 6 references, 3 of which are Soviet.

ASSOCIATION: Kiyevskiy gos. universitet, Kafedra elektroniki. (Kiyev State University, Chair of Electronics)

Card 2/2

85993

S/141/60/003/004/019/019
E032/E314

9,9845

AUTHOR: Levitskiy, S.M. and Baranchuk, N.S.

TITLE: On the Propagation of Electromagnetic Waves Along a Rod of Plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 4, pp. 725 - 726

TEXT: Schumann, Faynberg and Gorbatenko (Refs. 1, 2) have shown that slow surface electromagnetic waves can be propagated along a cylindrical plasma rod. In the absence of a magnetic field the propagation of these waves is possible provided $\omega_o \gtrsim \omega \sqrt{1 + \varepsilon_D}$, where ω is the frequency of the VHF field, $\omega_o = \sqrt{4\pi e^2 N/m}$ is the natural frequency of the plasma and ε_D is the dielectric constant of the surrounding medium. The maximum retardation of the waves occurs for $\omega_o \simeq \omega \sqrt{1 + \varepsilon_D}$ since for larger values of ω_o/ω the phase velocity tends to c . Such slow waves were experimentally observed by Sinel'nikov and Zeydlits (Ref.3)

Card 1/3

On the Propagation of Electromagnetic Waves Along a Rod of Plasma

and Bittner (Ref. 4). The present authors report a quantitative comparison between theory and experiment. A long gas discharge tube having an outer diameter of 1.25 cm and an internal diameter of 1 cm and filled with saturated silver vapour was employed in the experimental part of this work. The cooled part of the envelope was kept at 40 - 60 °C. Measurements were carried out between 2 000 and 3 000 Mc/s. The results obtained on 2 000 Mc/s are shown in Fig. 1. As can be seen from Fig. 1, for low concentrations the curve tends asymptotically to the line marked 1 , which represents the concentration for which no propagation of the signal can occur. The line marked 2 corresponds to the concentration determined from the condition

$\omega_o = \omega\sqrt{1 + \varepsilon_D}$, i.e. the theoretical limit for the propagation of electromagnetic waves. The dielectric

On the Propagation of Electromagnetic Waves Along a Rod of Plasma

constant ε_D of the glass was specially measured and was found to be 4.2. As can be seen, the theoretical limiting concentration is in good agreement with the experimentally measured value if ε_D is taken to be equal to the dielectric constant of the material surrounding the plasma.
There are 1 figure and 4 references: 2 Soviet and 2 German.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet (Kiyev State University)

SUBMITTED: April 29, 1960

Card 3/3

LEVITSKIY, S.M., dotsent

Review of V.N.Shevchik's book "Fundamental of microwaves." Izv. vys. ucheb. zav.; radiotekh. 4 no.1:120-121 Ja-F '61. (MIRA 14:4)

1. Rekomendovano kafedroy elektroniki Kiyevskogo gosudarstvennogo universiteta im. T.G.Shevchenko.
(Microwaves)
(Levitskii, S.M.)

33224
S/141/61/004/006/011/017
E192/E382

9,4230
9,1300

AUTHORS: Levitskiy, S.M. and Baranchuk, N.S.

TITLE: Investigation of the characteristics of a plasma waveguide

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 4, no. 6, 1961, 1078 - 1088

TEXT: The paper was read at the conference of MV and SSO SSSR for radio-electronics, Khar'kov, 1960.
The paper gives some experimental and calculated data for a cylindrical plasma waveguide. The experiments were carried out by means of the equipment illustrated in Fig. 1. In this, represents the generator, B is a wavemeter and A is a fixed attenuator of 10 db. $И_1$ is a coaxial measuring line, which is used for determining the matching of the waveguide. The investigated plasma waveguide is in the form of a long, sealed-off gas-discharge tube $Л$, which is situated inside a measuring line $И_1 И_2$ instead of the centre conductor. The principal unit of the gas-discharge tube is a calibrated glass tube having

Card 1/4

33224

S/141/61/004/006/011/017
E192/E382

Investigation of ....

an internal diameter of 10 mm and external diameter of 12.5 mm. The tube is terminated with an anode having the form of a short cylinder made of Kovar. A DC discharge between the anode and a heated cathode is ignited and the electron concentration in that portion of the tube which is outside the measuring line can be measured by a cylindrical probe U3 and a flat surface probe П3. The tube can be filled wither with mercury vapour or with hydrogen. Excitation of the tube can be effected by connecting its anode to the coaxial supply cable through the excitation system СВ. This system can be in the form of a delta - transformer, which connects the anode directly to the central conductor of the coaxial cable. A cylindrical plasma waveguide with an axially symmetrical wave of TM-type is analyzed on the basis of equations derived in Ref. 1 (W.O. Schumann - Z.f. Naturforsch., 5a, 181, 1950) and an expression for its delay factor β is given. The factor was also measured experimentally at a frequency of 670 Mc/s and the results are shown in Fig. 4, where β is plotted as a function of the electron concentration n_e (measured in the vicinity of the tube wall). Curve 1 in the

Card 2/4

Investigation of ...

figure is calculated under the assumption that the permittivity of the dielectric is $\varepsilon_1 = 4.2$; Curve 2 is for $\varepsilon_2 = 1$ for a tube with a screen, while Curve 3 is for $\varepsilon_2 = 1$ without the screen; Curve 4 was taken experimentally. The expression for the attenuation of the plasma waveguide is also derived and some experimental results are given. Some of these are shown in Fig. 6, where the attenuation coefficient α'' is plotted as a function of frequency (for $\beta = 6.5$ and a mercury-vapour pressure of 3.27×10^{-2} mm Hg). The wave impedance of the waveguide is also evaluated by employing the method of Ref. 13 (J. R. Pierce - Travelling-wave tubes, pubd. Sov. Radio, Moscow 1952). Some measured and calculated results of the wave impedance as a function of the electron concentration for the frequency of 670 Mc/s are given and it is found that the measured and experimental data are in qualitative agreement. By comparing the experimental and calculated results it is concluded that the permittivity of the wall material of the cylindrical plasma waveguide, which is in close contact with the plasma, is of great

33224
S/141/61/004/006/011/017
E192/E382

Investigation of

importance and that an accurate analysis of the waveguide should be based on formulae which take into account the irregularities of the dielectric surrounding the plasma. The attenuation in the waveguide is proportional to the gas pressure and increases with increasing frequency. Similarly, the wave impedance increases with frequency and becomes infinite at the critical frequency. There are 8 figures and 14 references: 11 Soviet-bloc and 3 non-Soviet-bloc. The English-language reference mentioned is Ref. 5 - A.W. Trivelpice, R.W. Gould - J. Appl. Phys., 30, 1784, 1959.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet (Kiyev State University)

SUBMITTED: February 6, 1961

Card 4/4

21414

9.3150 (1049, 1140, 1532, 2205) S/120/61/000/002/027/042
26.2311 E032/E114

AUTHORS: Levitskiy, S.M., and Plyatsok, Z.A.

TITLE: An oscillographic method for measuring the plasma parameters of a gas discharge

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.2, pp.150-152

TEXT: A description is given of a simple device for measuring the plasma parameters of a gas discharge. The device is said to be much simpler than those described by other workers (A.M. Bonch-Bruyevich, Ref.1; B.A. Mamyrin, Ref.2; P. Johnson, Ref.3; V.I. Drozdov, Ref.4). The basic circuit is shown in Fig.1. The current in the probe circuit is produced by the battery Б and the oscillator Г. The electron current from the probe passes through the diode Д. The voltage drop across this diode depends linearly on the logarithm of the current. In the case of the diodes ДГ-Ц 21 (DG-Ts 21), ДГ-Ц 24 (DG-Ts 24) and ДГ-Ц 27 (DG-Ts 27) this linear dependence is found to occur between 0.1 and 100 ma. However, the slope of the straight line may differ from diode to diode and must be determined in a preliminary experiment. The temperature of the diode has an

Card 1/ 4

S/120/61/000/002/027/042
E032/E114

An oscillographic method for .....

important effect and must be kept constant. The diode 2 is used to pass the probe ion current whenever it appears. The voltage drop across the diode 1 is applied to the Y-plates of the CRO amplifier, while the oscillator signal is applied to the X-plates. As a result, the volt-ampere characteristic of the probe is obtained on the screen on a semilogarithmic scale. A typical result is shown in Fig.2. The electron temperature can easily be found from the slope of the left-hand part of the curve. The charge concentration can be found by replacing the diode by the ohmic resistor. The above method has been checked with a DC discharge in mercury vapour. The oscillator [produced sinusoidal vibrations and the experiments were carried out between 30 and 300 cps. The plasma parameters were determined both by the oscillographic and the "usual" method. The table shows a comparison between the methods.
There are 2 figures, 1 table and 6 references: 5 Soviet and 1 English.
ASSOCIATION: Kiyevskiy gosudarstvennyy universitet
(Kiyev State University)

SUBMITTED: May 26 1960

S/057/61/031/004/007/018
B125/B205

24.2120 (1049, 1482, 1502) (also 3617, 3817, 2205)

AUTHORS: Levitskiy, S. M., Shashurin, I. P.

TITLE: Method of the resonance superhigh-frequency probe used to measure the concentration of charges in a plasma

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 4, 1961, 436-444

TEXT: A systematic investigation has been made of the mode of operation of a superhigh-frequency probe in the stationary plasma of a gas discharge. Besides, its possible use in an instationary plasma in the presence of a magnetic field has been checked. The method of the superhigh-frequency probe has the following advantages over the method of the hollow resonator: a certain complication of the design of the tube due to the introduction of the h-f probe into its volume; b) a disturbance of the plasma by the probe. However, these shortcomings are exhibited by almost all probe methods. The design of the tubes used for measurement is schematically shown in Fig. 1. These are gas-discharge tubes with heated oxide cathodes. Ordinary cylindrical probes were placed into the discharge tubes for control measurements and other purposes. The second part of the

Card 1/10

Method of the resonance...

present paper deals with the sources of error in measuring electron concentrations by the method of the superhigh-frequency probe. One of these error sources is the determination of the proper length of the superhigh-frequency system. λ_0 can be determined by a direct measurement of the geometric length of the line ($\lambda_0 = 2l/M$) and also by measuring its resonance frequency in the absence of plasma. The authors used both methods and obtained the same results within the limits of error. The concentration measured by a superhigh-frequency probe can be 10-20% lower than the actual charge concentration in the surrounding plasma. The experimental verification of the method of the superhigh-frequency probe was carried out chiefly in the plasma of a d-c discharge. Fig. 4 shows the relevant results of measurements in the 3-cm range. The electron concentration is plotted on the coordinate. The straight line shown in Fig. 4 was drawn according to the equation

$$\frac{1}{\lambda^2} - \frac{e^2}{\pi m_0^2} n_e = \frac{M^2}{4l^2} \quad (4)$$

and represents the electron concentration at which resonance is bound to occur if the line is excited by a wave of wavelength

Method of the resonance...

λ. The points illustrate the electron concentration measured by the method of the ordinary probe, at which resonance occurred at a given wavelength. The average deviation in concentration measurements amounts to 5%. Measurements in the range of decimeter waves showed good agreement. The electron concentrations measured by the method of the superhigh-frequency probe are 25-35% lower than those measured by the method of the ordinary probe. The resonance of the line may occur not only at N=1 but at any integral value of N. The resonances corresponding to N = 3,4,5 could be actually observed when changing the strength of the discharge current. The method of the hollow resonator has particular advantages over the ordinary probe method. These advantages are also exhibited by the method of the resonant superhigh-frequency probe which is described here. Measurements in instationary plasma were limited essentially to the following: In the case of time-dependent plasma intensity, the charge concentration at a certain instant of time will reach a value at which resonance occurs for the superhigh-frequency system. Figs. 5 and 6 illustrate measurements in a quasi-stationary and a disintegrating plasma, respectively. In this case, current pulses of a duration of 6-8 μsec could attain 300 a. The minimum is indicated by an arrow. The values

Card 3/10

Method of the resonance...

measured at different wavelengths were used to determine the time constant of plasma deionization, and were found to be in good agreement with data of V. L. Granovskiy. The last part of the present paper deals with measurements in plasma with constant flow in a longitudinal magnetic field: In the 3-cm range, the formulas $\varepsilon = 1 - e^2 n_e \lambda^2 / \pi mc^2$ (1) and (4) can be applied up to magnetic field strengths of $\sim$ 1000 oe. The resonance of the system becomes less distinct with an increase in the magnetic field strength, but is still very marked at field strengths of $\sim$ 1000 oe. When the magnetic field strength is increased to 700 oe and the charge concentration is kept constant, the electron current impinging on the probe is lowered by more than one order of magnitude, whereas the ion current changes by no more than 40%. The charge concentrations determined from the strength of the ion current are compiled in the attached table. There are 7 figures, 1 table, and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows: M. Biondi, Rev.Sci.Instr., 22, 500, 1951; A. Guthrie, R. K. Wakerling. The characteristics of electrical discharges in magnetic fields. Mc Graw Hill, N.Y. 1949.

Card 4/10

21541
S/057/61/031/004/007/018
B125/B205

Method of the resonance...

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko
(Kiyev State University imeni T. G. Shevchenko)

SUBMITTED: March 3, 1960

Card 5/10

34037

S/109/62/007/001/016/027
D230/D301

9,4120 (1003, 1140, 1105)

AUTHORS: Levitskiy, S.M., and Gvozdetskiy, V.S.

TITLE: The influence of the constant electric field on the start of pulsed microwave discharge in a gas

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 1, 1962, 133 - 141

TEXT: This is an examination of the effect of a constant electric field on the start of pulsed microwave discharge as a function of pressure and kind of gas, pulse repetition rate (p.r.r.) polarity and amplitude of the constant potential. Two distinct cases are considered: a) The effect of d.c. voltage on the start of the initial breakdown, b) the effect of d.c. voltage on the existence of self-sustained oscillations. Measurements carried out in air at pressures of 10 - 150 mm Hg and 800 p.r.r. showed that the d.c. field had little influence on the breakdown or time of the statistical lag. At low pressures below 10 mm Hg, when the striking time was sufficiently long, the effect of the d.c. voltage was analo-

Card 1/3

The influence of the constant ...

gous to that of incident c.w. power; at the time of discharge formation the field draws the electrons to the electrodes increasing the losses of the electrons and increasing the power required for initiation of the discharge. Tabulated results of the influence of d.c. voltage on the existence of self-sustained (simmering) discharge show that in the presence of the field the stability increases as the power increases. The effect of varying the p.r.r. on the microwave discharge is shown in two families of curves with and without applied d.c. field. In the case without field and low p.r.r.'s the discharge requires a more intense microwave field and for the following pulse are the same as for a single pulse. In the case with a d.c. field and different p.r.r.'s the curves do not differ much from each other. The action of the d.c. field in the interpulse period is to accelerate the deionization of the discharge gap and lower the concentration of the free electrons at the start of the following pulse; furthermore, application of the d.c. field removes the simmering discharge and reduces it to the case of breakdown at individual pulses. At pressures higher than 10 mm Hg the application of the d.c. field cannot prevent the occurence of

Card 2/3

34497
S/109/62/007/002/022/024
D256/D303

26.2253
26.1140

AUTHORS: Morgulis, N.D., Levitskiy, S.M., and Groshev, I.N.

TITLE: Current oscillations in the system of a thermo-electronic energy converter with cesium vapor

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 2, 1962, 352 - 353

TEXT: The experimental cesium-vapor tube contained a Ta-tape cathode and a similar anode covered with a layer of cesium and provided with additional screening electrodes, the distance between the anode and the cathode being adjustable. The following parameters were varied during the investigation: The temperature of the cathode T_k, the saturation temperature of the cesium vapor t and the distance between the electrodes d. It was found that for a given d there are two discrete regions where oscillations exist, these are shown on a $t - T_k$ diagram. In the low T_k regions the oscillations are almost purely sinusoidal with a frequency ranging from 20 to 160 kcs/sec.

Card 1/2

Current oscillations in the ...

In the second region of oscillations with higher T_k the oscillations were non-sinusoidal and their frequency was in the range of 1000 kcs/sec, the output power of the oscillations at this region being appreciable. The output power was investigated for both a.c. and d.c. as a function of the load resistance with the remaining parameters fixed at the following values: T_k = 2450°K; t = 120°C; d = 1 mm, and 3.6 and 0.9 watt/cm^2 maximum values of the output power were observed for d.c. and a.c. respectively, the corresponding voltages being 1.9 and 0.9 V. The respective efficiency of the converter for d.c. and a.c. was estimated to be $\eta_1 \geqslant 5$ %, $\eta_2 \geqslant 1$ %. There are 3 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: R. Fox and W. Gust, Bul. Amer. Phys. Soc., 1960, 5, 80; Electronics 1960, 33, 5, 78.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko (Kiyev State University im. T.G. Shevchenko)

SUBMITTED: July 3, 1961

Card 2/2

LEVITSKIY, S.M.; BARANCHUK, N.S.

Studying the properties of a cylindric plasma wave guide.
Izv.vys. ucheb. zav.;radiofiz. 4 no.6:1078-1088 '61. (MIRA 14:12)

1. Kiyevskiy gosudarstvennyy universitet.
(Wave guide)
(Plasma(Ionized gases))

LEVITSKIY, S.M.; GVOZDETSKIY, V.S.

Effect of a constant electric field on the initiation of an impulse microwave discharge in a gas. Radiotekh. i elektron. 7 no.1:133-141 Ja '62. (MIRA 15:1)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.
(Electric discharges) (Microwaves)

LEVITSKIY, S. M.[Levyts'kyi, S. M.]

Plasma, the fourth state of aggregation. Des. such. fiz. no.6: 34-55 '62. (MIRA 16:1)

(Plasma(Ionized gases))

LEVITSKIY, S. M.; BARANCHUK, N. S.

Study of some properties of a delay system consisting of a helical guide surrounding a plasma rod. Izv. vys. ucheb. zav.; radiofiz. 5 no.5:972-977 '62. (MIRA 15:10)

1. Kiyevskiy gosudarstvennyy universitet.

(Plasma(Ionized gases)) (Wave guides)

LEVITSKIY, S. M.
AID Nr. 979-9 29 May

OSCILLATIONS IN A CESIUM-VAPOR DIODE (USSR)

Levitskiy, S. M., and I. N. Groshev. Radiotekhnika i elektronika, v. 8, no. 4, Apr 1963, 612-618. S/109/63/008/004/009/030

Plate-current oscillations in a diode filled with cesium vapor were investigated by means of an experimental tube operated at various values of vapor pressure, cathode heating, and anode voltage. The cathode was a thin, 1-mm wide tantalum strip, while the anode was formed by tantalum plates placed on both sides of the strip, which could be simultaneously adjusted either closer or farther apart, thus changing the distance from plate to cathode from 0.7 to 10 mm. The tube was placed in a thermostat whose temperature could be regulated from 20 to 300°C. Either a resistance directly connected in the plate current, or one coupled to it through an hf transformer, served as the load. Results of the investigations confirm the existence of two modes of oscillation: mode I corresponds to high pressure and low cathode temperature, and mode II corresponds to low pressure and high cathode temperature. Mode I oscillations are of low intensity and have a

Card 1/2

OSCILLATIONS [Cont'd]

S/109/63/008/004/009/030

frequency of the order of 1 to 20 kc and a waveform close to sinusoidal. In mode II, the mode principally discussed, oscillations are very intense, have a frequency of the order of 100 to 1000 kc, and may have a waveform quite different from the sinusoidal. In mode II oscillation the amplitude decreases with a drop in cathode temperature and ceases abruptly at a critical lower boundary temperature. At a cathode temperature of about 2000°K, the oscillation frequency varies at first only slightly, but on approaching the lower boundary it suddenly increases almost twofold. Moreover, mode II oscillation intensity decreases as anode voltage is reduced to zero and then to negative values, and disappears at some critical negative potential. Oscillations disappear also at excessive positive potentials. This positive potential limit was found to vary directly with the cathode-anode spacing, and also directly with increased cathode temperature. From the analysis of test results it is concluded that the oscillatory condition is linked to the bunching action of gas ions in the interelectrode space. Measurements with an ion probe support this view.

[DW]

Card 2/2

Levitskiy, S.M.

AID Nr. 974-17 22 May

PASSAGE OF A SIGNAL BETWEEN TWO HIGH-FREQUENCY PROBES INSERTED IN PLASMA (USSR)

Levitskiy, S. M., and J. P. Shashurin. Zhurnal tekhnicheskoy fiziki, v. 33, no. 4, 1963, 429-436. S/057/63/033/004/011/021

The equipment for measuring electron concentration in plasma by passing an shf signal through the plasma, consisted of an shf generator, 10-db fixed attenuator, transmitting probe, receiving probe, second 10-db adjustable attenuator, and the receiver. A wavemeter was coupled to the generator. Measurements were carried out in the frequency range from 300 to 2000 Mc. Plasma was produced in a mercury vapor discharge tube. In order to control vapor pressure, temperature of 20°C was maintained by a thermostat. The working section of the tube was 40 to 50 mm in diameter and 250 mm long, so that a sufficient distance could be kept between the probes and tube electrodes.

AID Nr. 974-17 22 May

PASSAGE OF A SIGNAL [Cont'd] S/057/63/033/004/011/021

The following method of investigation was used: 1) The electron concentration near the probes was measured by means of the Langmuir probes placed close by the shf probes. 2) The relationship between signal intensity and discharge current was determined at a given generator frequency. 3) Intensity of passing signals was measured by the compensation method. Signal intensity was obtained in db in relation to the intensity existing in absence of plasma, and the electron concentration was found by using a nondimensional value proportional to concentration:

$$p = \frac{\omega_0^2}{\omega^2} = \frac{4\pi e^2}{m\omega^2} n_e ,$$

where ω_0 is natural plasma frequency, ω is signal frequency, and n_e is electron concentration. Minima of the passing signals, which were regularly observed at $p \approx 1$, could be identified as plasma parallel resonance under condition $\omega_0 = \omega$. In contrast, signal maxima did not correspond to any one definite value of the parameter p, and could appear (depending on actual conditions such as probe design and signal frequency) at p_{max} values between 2 and 7.

Card 2/3

AID Nr. 974-17 22 May

PASSAGE OF A SIGNAL [Cont'd] S/057/63/033/004/011/021

The origin of the maximum can be explained by the resonance of a series circuit consisting of plasma and the internal capacity of the probe system. It was concluded that plasma resonance corresponds to the minimum of the passing shf signal. The observed maxima appear due to the presence of space charge layers near the probe surfaces or the excitation of waves in a plasma waveguide. An attempt to detect plasma wave excitation near the transmitting probe gave negative results. [KM]

Card 3/3

LEVIT.KIY, Yergoy Mikhaylovich; MIKONET., Ye.N., red.

[Collection of problems and calculations in physical electronics] Sbornik zadach i raschetov po fizicheskoi elektronike. Kiev, Izd-vo Kievskogo un-ta, 1964. 219 p. (MIRA 17:11)

ACCESSION NR: AP4009985 S/0109/64/009/001/0132/0137

AUTHOR: Levitskiy, S. M.; Groshev, L. N.

TITLE: Oscillatory phenomena in cesium-vapor-filled diodes

SOURCE: Radiotekhnika i elektronika, v. 9, no. 1, 1964, 132-137

TOPIC TAGS: cesium diode, cesium vapor filled diode, cesium tube oscillator, cesium tube oscillator phenomena, frequency pulling, frequency locking, diode synchronization

ABSTRACT: An experimental study of frequency pulling, locking, parallel operation, and maximum power of oscillations set up in a cesium-vapor-filled diode is reported. The frequency pulling was measured at 200-300 kc and 2,300K temperature of the cathode, with the diode operating under intermittent (50 cps) generation conditions. A GSS-6 oscillator was used as a source of oscillations in the locking experiments; the locking range was observed as wide as 20%.

Card 1/2

ACCESSION NR: AP4009985

Parallel operation and synchronization were investigated in a scheme comprising two identical cesium diodes; frequency vs. coupling and total output power vs. load resistance curves are reported. A-c power and the efficiency of thermal-to-electric energy conversion constitute only a part of the d-c values which could have been obtained from the same diode under nonoscillatory conditions. "In conclusion, we wish to thank N. D. Morgulis for his constant interest in the work, his valuable advice and suggestions." Orig. art. has: 6 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 11Dec62	DATE ACQ: 10Feb64	ENCL: 00
SUB CODE: GE .	NO REF SOV: 005	OTHER: 006

Card 2/2

ACCESSION NR: AP4043677 S/0109/64/009/008/1433/1439

AUTHOR: Morgulis, N. D.; Levitskiy, S. M.; Panichevskiy, V. A.

TITLE: Determination of parameters of gas-discharge cesium plasma by the superhigh-frequency method

SOURCE: Radiotekhnika i elektronika, v. 9, no. 8, 1964, 1433-1439

TOPIC TAGS: plasma, plasma gas collision, plasma measurement, cesium plasma, gas discharge plasma

ABSTRACT: An experimental investigation of the electron-collision frequency and rate of decay of a weak ionized cesium plasma by the SHF-resonator method at 3-cm wavelength is reported. Charge concentrations within 10^{11}—10^{12} cm^{-3} and cesium vapor pressures within 0.01—0.2 torr were used. By measuring the Q-factor of a cesium-plasma-filled resonator at various pressures, the collision frequency at 1 torr was found to be 3×10^9 per sec and the effective cross-section

Card 1/2

ACCESSION NR: AP4043677

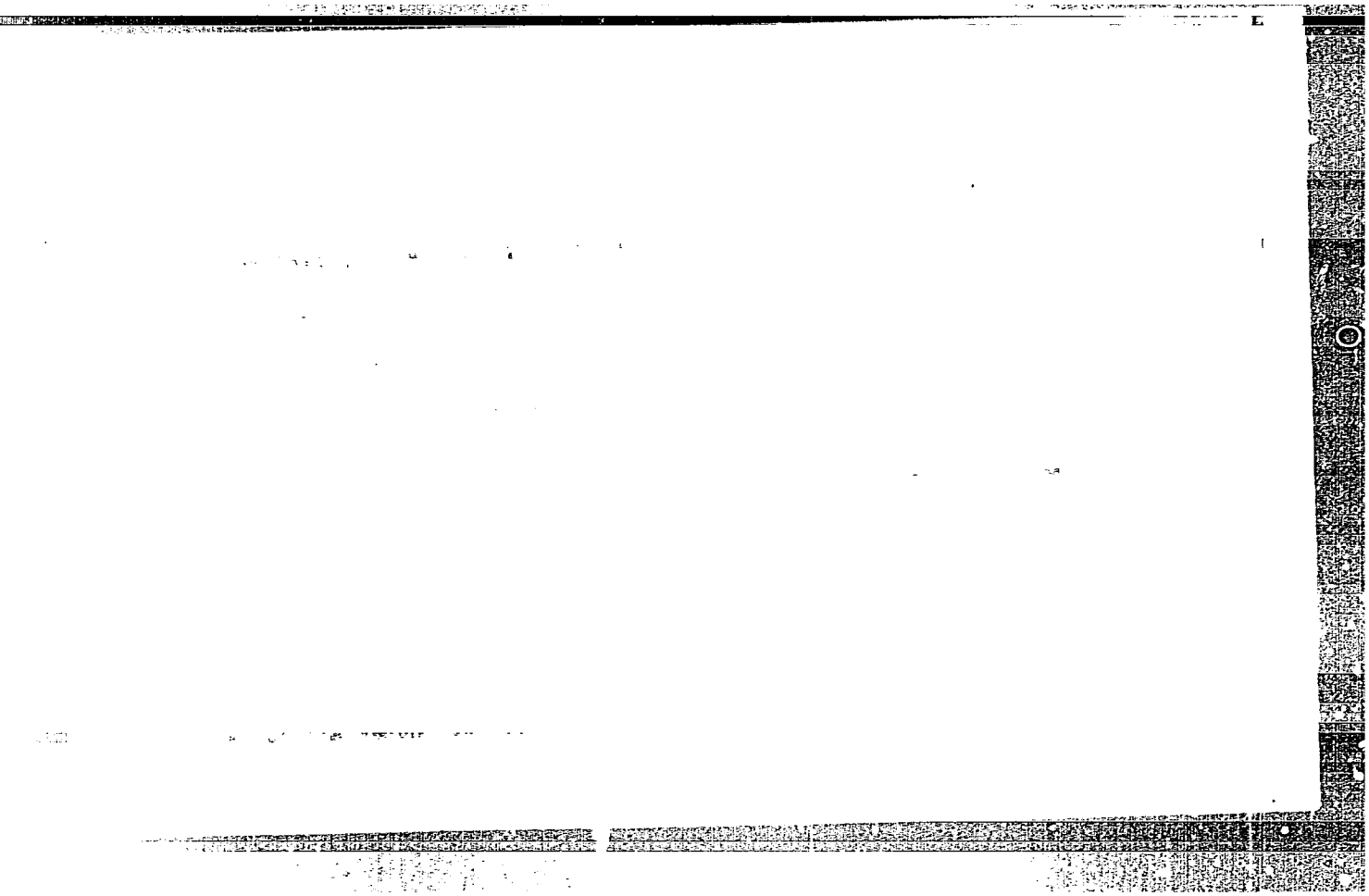
of the scattering of electrons by plasma atoms, 0.4×10^{-14} cm^2. Also, the coefficient of bipolar diffusion (10—20 cm^2/sec) was determined. This data is compared with results published by other researchers and discussed. Orig. art. has: 6 figures and 5 formulas.

ASSOCIATION: Kiyevskiy gosudarstvenny*y universitet (Kiev State University)

SUBMITTED: 15Jun63 ENCL: 00

SUB CODE: ME NO REF SOV: 008 OTHER: 008

Card 2/2



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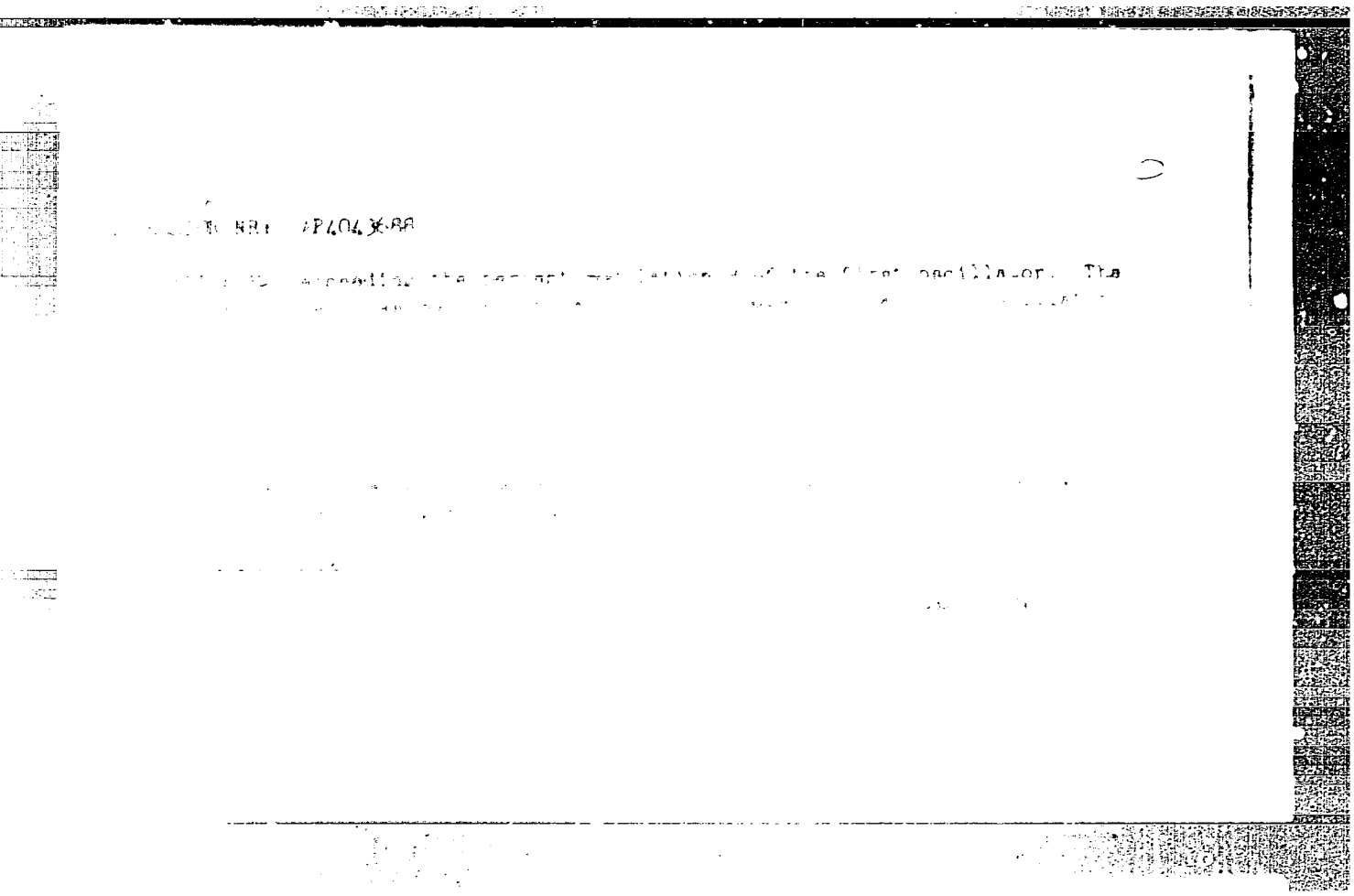


ACCESSION NR: AP4042921 S/0057/64/034/008/1374/1379

AUTHOR: Karplyuk, K.S.; Lovitskiy, S.M.

TITLE: The dispersion equation for an electron beam in a plasma in the presence of a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.8, 1964, 1374-1379

TOPIC TAGS: plasma, magnetic field plasma effect, electron beam, dispersion relation

ABSTRACT: The dielectric tensor is derived for a plasma traversed in the direction of a uniform applied magnetic field by a monoenergetic beam of electrons, and from this the dispersion equation is obtained for waves propagating parallel to the axis of a cylinder of conducting material and circular cross section which encloses such a system. The derivation is based on the linearized hydrodynamic equations for the motion of the plasma electrons and the beam electrons in the applied field and the field generated by their motion. The transverse motions of both the beam and the plasma electrons, as well as the collisions of the plasma electrons with ions and atoms, are taken into account. Collisions of the beam electrons, however, and the motions of the ions, are neglected, and the electron temperature of the plasma is

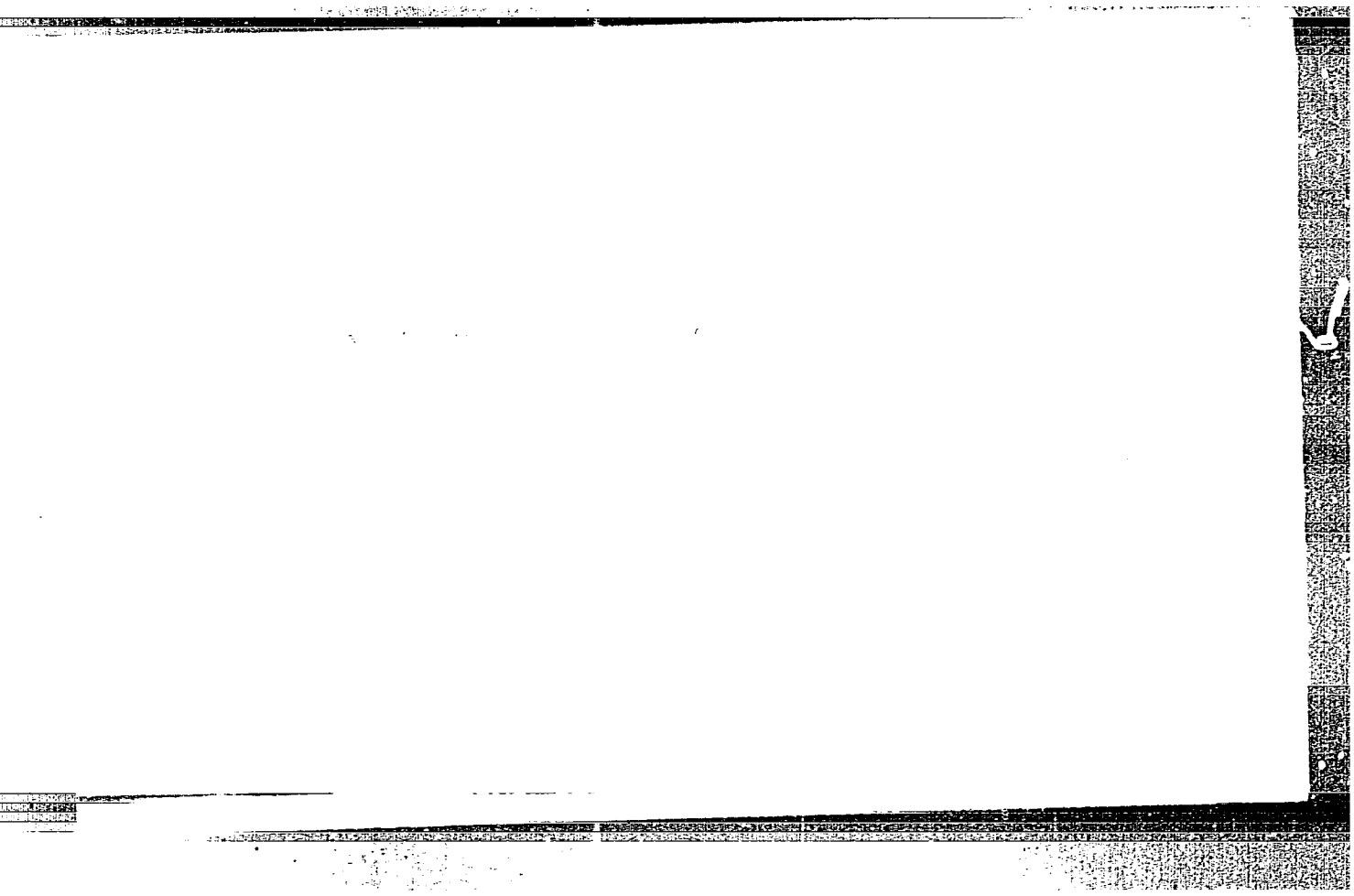
1/3

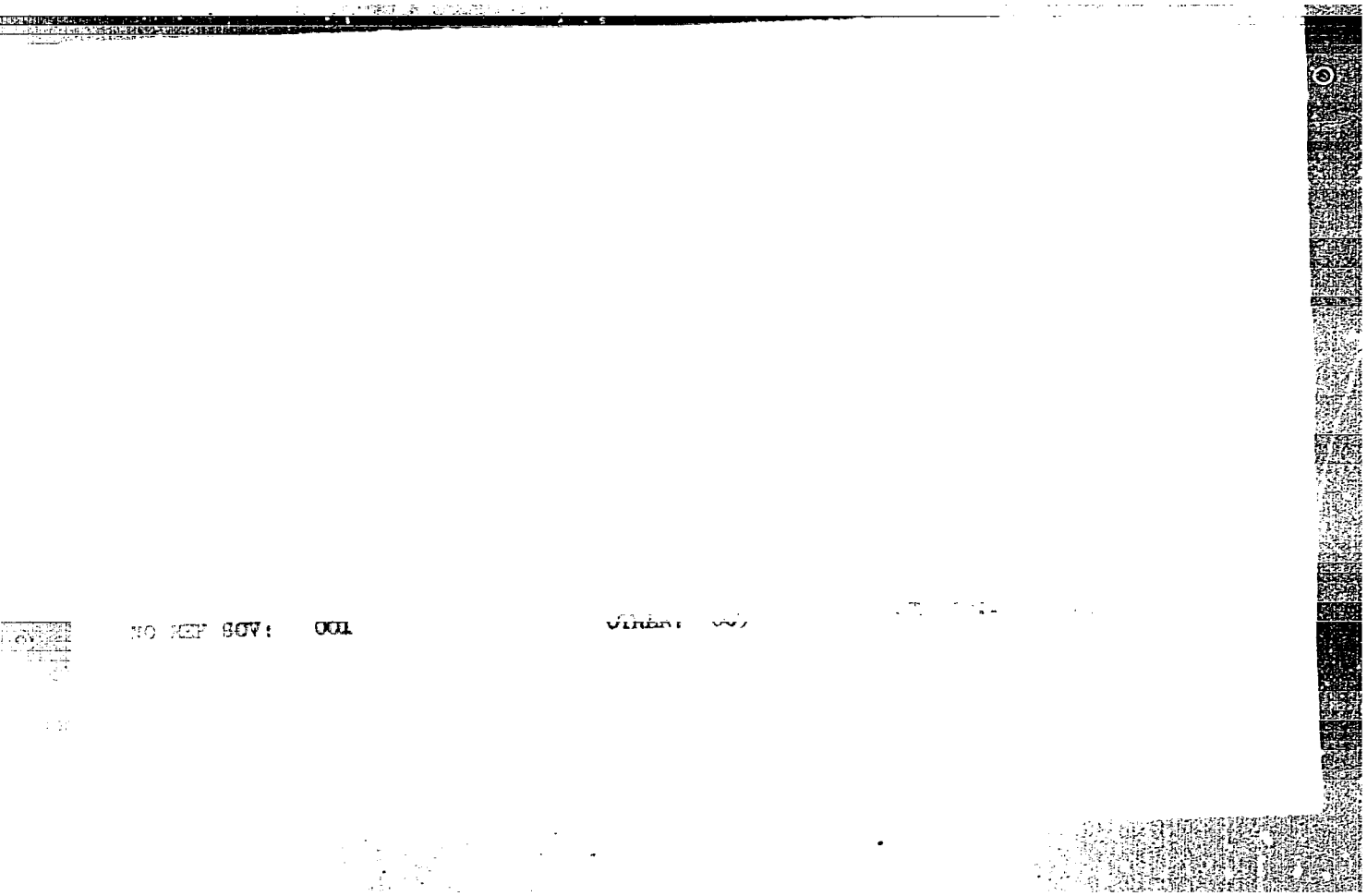
assumed to be zero. The dispersion equation obtained for waves propagating parallel to the axis of a conducting cylinder enclosing a plasma and an axial electron beam and located in an axial magnetic field is rather involved. It is simplified for the special case of waves with phase velocity much less than the velocity of light. This dispersion equation yields several previously obtained results as special cases: in the absence of the electron beam it reduces to the dispersion relation for a plasma waveguide (A.W.Trivelpiece and R.W.Gould,J.Appl.Phys.,30,1784,1959); in the absence of the plasma it becomes the dispersion equation for an electron beam in a metal tube in the presence of a magnetic field (A.H.W.Beck, Space Charge Waves and Slow Electromagnetic Waves, Pergamon Press,1958); and as the radius of the cylinder increases without limit it approaches the dispersion equation for a cold unbounded plasma in a uniform magnetic field traversed by a uniform beam of electrons parallel to the field (D.Bohm and E.Gross, Phys.Rev.75,1851,1949; 75,1864,1949; 79,992, 1950; A.I.Akhiyezer and Ya.B.Faynberg,ZhETF 21,1262,1951). A future paper is promised in which the consequences of the dispersion equation will be discussed. Orig. art has: 38 formulas.

LEVITSKIY, S.M.; KAPELYUK, K.S.

Use of a meteor trail model in studying the interaction of radio waves. Geofiz. i astron. no.8:29-34 '65. (MIRA 19:1)

1. Kiyevskiy gosudarstvennyy universitet.





[illegible]

TITLE: Diffusion theory of a beam plasma

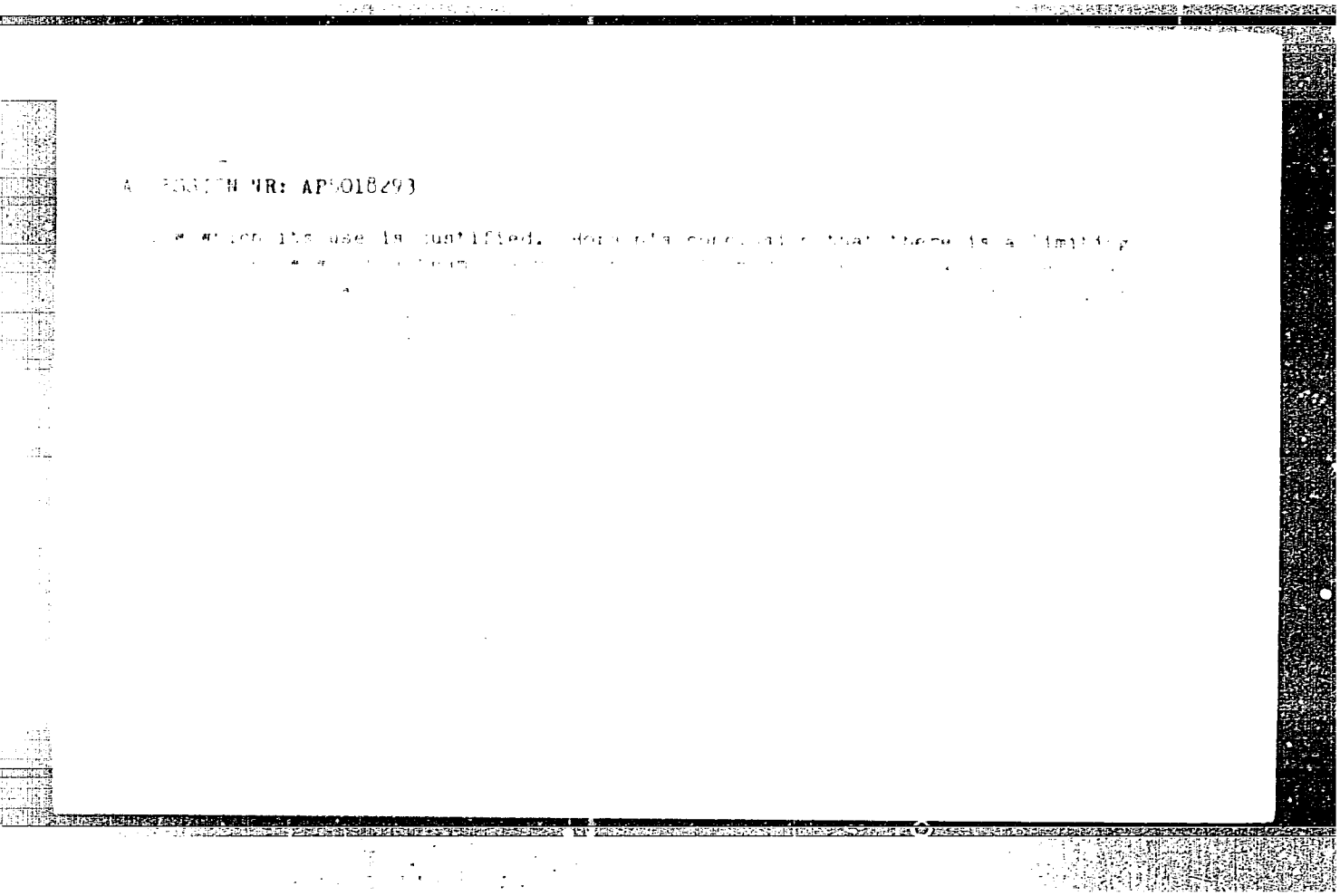
SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 7, 1965, 1182-1188

TOPIC TAGS: beam plasma, plasma diffusion, plasma stability, electron beam, electron temperature, hydrogen

ABSTRACT: This paper is concerned with the stable behavior of a "beam plasma" [illegible]

garded as unsatisfactory because Hopson assumed that the plasma ions could de- [illegible] freely in the axial direction (whereas the plasma diffusion is ambipolar in all directions), and because he employed the diffusion equation at pressures

Card 1/2

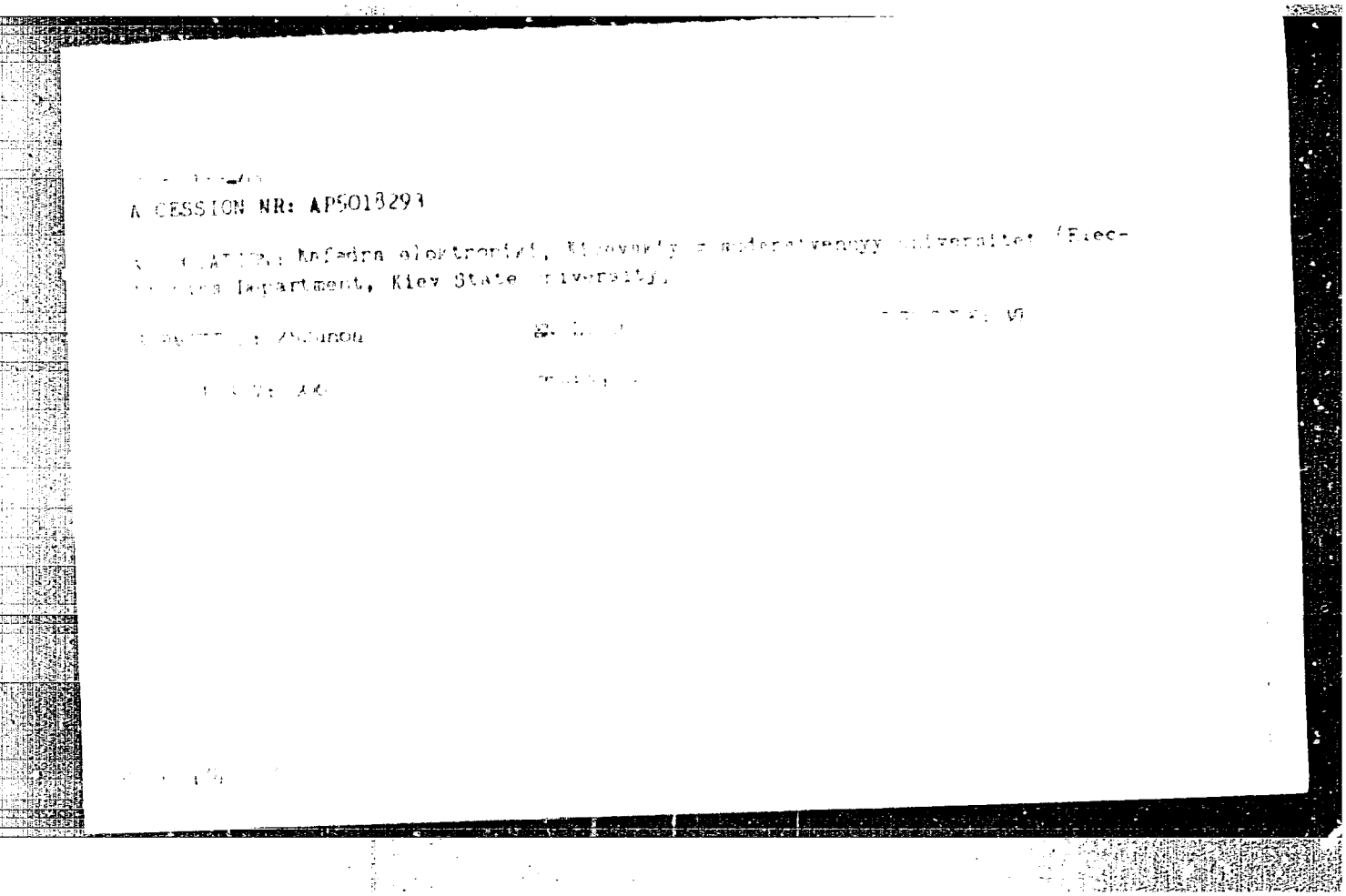


ACCESSION NR: AP5018293

about 0.02 mm Hg, and subsequently increased as the square of the pressure. The agreement was roughly quantitative for an electron temperature of 20 000 °K. Increasing the magnetic field or the electron beam current led to instability [illegible] by the appearance of high frequency electromagnetic noise and to the disappearance of the plateau. The variation of the plasma electron density is [illegible]

[illegible] figures

Card 3/4



ACCESSION NR: AP5018293

[illegible] Kafedra elektroniki, Kiyevskiy [illegible] universitet (Elektronika [illegible] Department, Kiev State [illegible] University)

L 10275-66 FSS-2/EWT(1)/EWA(d) GW/WR

ACC NR: AT5028299 SOURCE CODE: UR/3133/65/000/008/0029/0034

AUTHOR: Levitskiy, S. M.; Karplyuk, K. S.

ORG: Kiev State University (Kiyevskiy gosudarstvennyy universitet)

TITLE: Investigation of the interaction of radio waves with a model of a meteor trail

SOURCE: AN UkrSSR. Mezhduvedomstvennyy geofizicheskiy komitet. Informatsionnyy byulleten'. no. 8, 1965. Geofizika i astronomiya (Geophysics and astronomy), 29-34

TOPIC TAGS: radar meteor observation, meteor trail, electromagnetic interaction

ABSTRACT: The interaction of radio waves with meteor-trail models of perpendicular and parallel polarization was studied experimentally. Measurements were conducted at 3000 Mc using a long gas-discharge tube filled with saturated mercury vapors as the model. In the case of parallel polarization, it was found that a marked reflection began when the reflecting diameter of the plasma column was 10—20% of the wavelength. In the case of perpendicular polarization, a series of reflection maxima corresponding to various electron concentrations was detected. The existence of these reflection maxima is explained by the theories of N. Herlofson, T. B. Kaiser, and R. L. Closs. The solution of the problem of electromagnetic-wave interaction with meteor trails is considered essential for determining astronomical parameters of meteors from radiometric measurements. Orig. art. has: 2 figures and 2 tables. [JR]

SUB CODE: 03, 17/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 009/ ATD PRESS: 4164

Card 1/1

L 5091-66 EWT(1)/EPA(w)-2/EWA(m)-2 IJP(c) AT
ACCESSION NR: AP5020124 UR/0109/65/010/008/1467/1471
621.385.032.269.1

AUTHOR: Baranchuk, N. S.; Levitskiy, S. M.

TITLE: Effect of the ion space charge on the operation of an electron gun in gas

SOURCE: Radiotekhnika i elektronika, v. 10, no. 8, 1965, 1467-1471

TOPIC TAGS: electron gun

ABSTRACT: The results are reported of an experimental investigation of the operation of an electron gun at 0.0001—0.1 torr with beam currents up to a few dozen ma. A cylindrical 2.8-mm diameter cathode was coated with an oxide paste. The cathode-first-anode distance was 1 mm; the same distance between the first anode and the second anode. Beam electron energy, 0.5—1.5 kev; hydrogen atmosphere. Gun-collector distance, 30—40 cm. It was found that the ion space charge formed inside the gun (near the first anode) enhanced its focusing capability and caused overfocusing. To counteract the influence of the ion space

Card 1/2

L 5091-66
ACCESSION NR: AP5020124

charge on the electron-optical characteristics of the gun, prevention of the appearance and accumulation of ions inside the gun is recommended. Shorter interelectrode spacings and shorter length of the entire gun are regarded as the best remedy. Orig. art. has: 2 figures.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet (Kiev State University)

SUBMITTED: 04May64 ENCL: 00 SUB CODE: EC

NO REF SOV: 004 OTHER: 000

Card 2/2 hd

L 45922-66 EWT(1) IJP(c) AT

ACC NR: AP6028607 SOURCE CODE: UR/0057/66/036/008/1364/1371

AUTHOR: Levitskiy, S.M.; Shashurin, I.P.

ORG: Kiev State University im. T.G.Shevchenko (Kiyevskiy gosudarstvennyy universitet)

TITLE: Perturbation of a beam plasma by the fields of the oscillations that arise in it

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 8, 1966, 1364-1371

TOPIC TAGS: hydrogen plasma, electron beam, electron temperature, plasma oscillation, plasma stability, plasma beam interaction

ABSTRACT: The authors have continued their earlier investigation (ZhTF, 35, No.7, 1965) of the plasmas produced by ionization of the residual gas in a low-vacuum chamber by an electron beam ("beam plasmas"). The present experiments, using the apparatus described in the earlier paper, were undertaken in an effort to elucidate some of the complex phenomena previously noted by the authors and others in connection with the oscillations that arise in beam plasmas. In the present experiments the beam plasmas were produced in a more than 18 cm long, 1 cm diameter glass tube containing hydrogen at from 10^{-4} to 10^{-1} mm Hg by an up to 25 mA beam of 0.5 to 1.5 keV electrons in the presence of an up to 500 Oe longitudinal magnetic field. The electron densities in the plasmas were determined from the shift in the resonant frequency of a cavity resonator enclosing part of the discharge tube, and the intensity of the plasma oscillations was observed by recording the strength of the signals in the 350 to 750

UDC: 533.9

Card 1/2

009 OTH REF: 007

L 45926-66 EWT(1) IJP(c) AT

ACC NR: AP6028614 SOURCE CODE: UR/0057/66/036/008/1402/1408

AUTHOR: Karplyuk,K.S.; Levitskiy,S.M.

ORG: Kiev State University im. T.G.Shevchenko (Kiyevskiy gosudarstvennyy universitet)

TITLE: Interaction of a bounded electron beam with a plasma in the presence of a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no.8, 1966, 1402-1408

TOPIC TAGS: plasma waveguide, plasma beam interaction, electron beam, plasma oscillation, plasma magnetic field, mathematic physics, dispersion equation

ABSTRACT: The authors discuss in the hydrodynamic approximation with neglect of the thermal motions the oscillations of a plasma filament in a longitudinal magnetic field through which there passes an electron beam. The boundary conditions at the plasma - dielectric boundary are derived and the calculations are carried through to the point where the dispersion equation can be written for any particular cylindrical system. The dispersion equation for slow waves is derived for the case of a metallic tube uniformly filled with the plasma and the electron beam, and analytic expressions are obtained for all six of its roots for the limiting case of a low intensity electron beam. Solutions of the dispersion equation for the case of a more intense electron beam were obtained with the aid of a computer, and these, as well as the analytic solutions, are discussed. Regions are found in which wave amplification occurs. These regions are delineated and the dependence of the gain on the type of oscillation is

Card 1/2

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ACC NR: AP6028614

discussed. In the case of certain nonaxisymmetric oscillations the equations indicate that the gain is greater for the higher order oscillations than for the lower order ones; this unusual behavior may actually not occur, however, because of the increase with frequency of the plasma waveguide attenuation, which was not taken into account in the calculations. Orig. art. has: 22 formulas and 1 figure.

SUB CODE: 20 SUBM DATE: 10Jun64 ORIG. REF: 008 OTH REF: 007

Card 2/2

L 00083-67 EWT(1)/FCC GW

ACC NR: AR6022457 SOURCE CODE: UR/0169/66/000/003/A013/A014

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B

AUTHOR: Levitskiy, S. M.; Karplyuk, K. S.

TITLE: Investigation of radiowave interaction with the model of a meteor trail

SOURCE: Ref. zh. Geofiz, Abs. 3A57

REF SOURCE: Geofiz. i astron. Inform. byul., no. 8, 1965, 29-34

TOPIC TAGS: radiowave interaction, model theory, meteor trail, gas discharge, electron polarization, electron concentration, discharge tube

ABSTRACT: The interaction of radiowaves with a model of a meteor trail with perpendicular and parallel polarization has been studied. A long gas-discharge tube was used for a model and the measurements were carried out at a frequency of 3000 Mc. In the case of waves with parallel polarization, the obtained values of the effective reflecting diameter agreed with the Gerlofson theory. In the case of perpendicular polarization, a resonance reflection was observed. However, contrary to the prediction of Gerlofson's theory, the main resonance peak was accompanied by a series of peaks of lower intensity with lower values of electron

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ACC NR: AR6022457

concentration.[12] Experimental disagreements with the theory are attributed to the approximate nature of the theoretical calculations. [Translation of abstract]

SUB CODE: 03/

kh

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